

### REMARKS

Applicant seeks reconsideration of the application. In this response, no claims are canceled, no claims are added and no claims are amended. Accordingly, Claims 28-31, 33-34 and 37 are pending.

In the Office Action, Claims 28-31, 33, 34 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yonehara et al. (U.S. Patent No. 6,150,031) in view of Applicant's acknowledged prior art, as shown on figure 2 (FIG. 2). Applicant respectfully traverses this rejection.

Claim 28 recites an apparatus comprising:

- [1] a first substrate portion having a dielectric layer on a surface; and
- [2] a second single crystal substrate portion defining a device surface wherein the dielectric layer of the first substrate portion is bonded directly to the device surface of the second substrate portion,
- [3] the second single crystal substrate having active devices formed thereon,
- [4] wherein selected ones of said active devices of said second substrate portion are intercoupled via metal lines.

In rejecting Claim 28, the Examiner asserts that Yonehara teaches limitations [1] and [2] but fails to teach limitations [3] and [4]. The Examiner asserts that limitations [3] and [4] of Claim 28 are taught by Applicant's admitted prior art figure 2 (FIG. 2). Applicant respectfully submits that Claim 28 is not obvious over Yonehara in view of FIG. 2.

Yonehara discloses a first substrate portion 23 having a dielectric layer 24 and a second single crystal substrate 22 formed on the dielectric layer 24. However, as correctly noted by the Examiner, Yonehara does not teach or suggest a second single crystal substrate portion having active devices formed thereon and defining a device surface, as required by Claim 28. Additionally, as correctly noted by the Examiner, Yonehara does

not teach or suggest intercoupling selected ones of the active devices of the second substrate portion via metal lines, as required by Claim 28.

Applicant respectfully submits that FIG. 2 of Applicant's specification also does not disclose or suggest a second single crystal substrate portion having active devices formed thereon and intercoupled via metal lines, as required by Claim 28. Instead, the background second and FIG. 2 merely mention that, prior to the disclosure, the second layer of active devices (transistors) was not made of a single-crystal silicon but was made of a polycrystalline silicon or amorphous silicon because fabrication of a second layer of active devices made of single silicon crystal requires processing steps that are performed well beyond the temperature that the interconnect system (e.g., metal lines interconnecting the transistors) can withstand.

In this regard, it is not clear how the structure taught by Yonehara could be modified in accordance with the subject matter of Claim 28 because neither Yonehara nor FIG. 2 discloses or suggests that it is possible to fabricate a second layer of active devices made of single silicon crystal with metal lines intercoupling the active devices. Therefore, Applicant submits that, even if Yonehara and FIG. 2 could be combined, the combination would not yield the apparatus as claimed in Claim 28, as neither Yonehara nor FIG. 2 disclose or suggest providing a second single crystal substrate portion having active devices formed thereon in which the active devices are intercoupled via metal lines. Accordingly, Yonehara and FIG. 2, individually or in combination, fail to disclose or suggest providing a second single crystal substrate portion having active devices formed thereon in which the active devices are intercoupled via metal lines, as claimed in Claim 28.

Moreover, Applicant respectfully submits that the obviousness rejection of Claim 28 is based on impermissible hindsight analysis. More specifically, because the reference (Yonehara) relied upon by the Examiner does not relate to the same problem confronted by the inventor, Applicant submits that the obviousness rejection of Claim 28 is based on an impermissible hindsight analysis.

When an obviousness rejection is made based upon a combination of references, the Examiner “must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998). Moreover, it is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior or by implications contained in such teachings or suggestions. In re Sernaker, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). In addition, the Federal Circuit states that “[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” In re Fritch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), citing In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

As noted above, the Federal Circuit requires that the Examiner’s basis for combining the references relates to the same problem as that confronted by the inventor. One of the problems that the patent application and the claimed subject matter addresses is making an integrated circuit smaller by reducing the X-Y dimensions of the integrated circuit. In accordance with one embodiment, the patent application provides a way to further reduce the X-Y dimensions of an integrated circuit by providing a second level of transistors in the Z dimension made of a single crystal. However, Yonehara does not relate to reducing X-Y dimensions of an integrated circuit by providing a second level of transistors in the Z dimension. In fact, there is nothing in Yonehara that discloses or suggests that the second layer made of single silicon crystal may be used to reduce the X-Y dimensions of an integrated circuit by providing a second level of transistors in the Z dimension. Because Yonehara relied upon by the Examiner does not address to the same problem confronted by the inventor, Applicant respectfully asserts that the obviousness rejection of Claim 28 is based on an impermissible hindsight analysis.

Furthermore, in rejecting Claim 28, the Examiner is unable to point out any specific teaching or suggestion for combining Yonehara with FIG. 2. The Examiner is instead

relying on what it presumes is the level of knowledge of one of ordinary skill in the art at the time of the invention to supply the missing suggestion to combine. However, the one of ordinary skill in the art component will rarely operate to supply missing knowledge and to support a suggestion or motivation to combine references. *See Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999). *See W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983) (holding that “[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher”); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991) (holding that one of ordinary skill in the art does not act as a bridge over gaps in substantive presentation of an obviousness case). Accordingly, Applicant respectfully asserts that the obviousness rejection of Claim 28 is based on an impermissible hindsight analysis.

As to Claim 31, the Examiner has rejected Claim 31 for the same rationale as set forth regarding Claim 28. To the extent the Examiner applied same arguments to reject Claim 31, the above remarks regarding Claim 28 apply to Claim 31. Additionally, Applicant respectfully submits that Yonehara and FIG. 2, individually or in combination, fail to disclose or suggest providing: [1] a primary substrate having a first level of devices formed thereon and defining a first device surface, and [2] a secondary single crystal substrate portion having active devices formed thereon, wherein selected ones of the active devices of the secondary single crystal substrate are intercoupled via metal lines to selected ones of the first level of devices of the primary substrate, as recited in Claim 31.

In view of the foregoing, Applicant respectfully submits that Claims 28 and 31 are not obvious over Yonehara in view of FIG 2 and requests withdrawal of this rejection. Dependent Claims 29, 30, 33-34 and 37 are submitted as not being obvious in view of the relied upon references at least for the reasons given in support of their base Claims 28 and 31.

### CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance, and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, LLP

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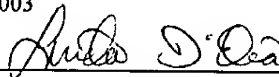


William Thomas Babbitt  
Reg. No. 39,591

12400 Wilshire Boulevard  
Seventh Floor  
Los Angeles, California 90025  
(310) 207-3800

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Linda D'Elia

March 31, 2003